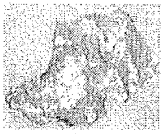
Attachment No.1



GOLD BOOK

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Search results

alkylene search

Results 1–1 of 1 for '**alkylene**'

alkylenes
alkylenes An old term, which is not recommended, for alkenes, especially those of low molecular weight. An old term for alkanediyl groups commonly but not necessarily having the free valencies on...

Time 4.32ms

about
sitemap

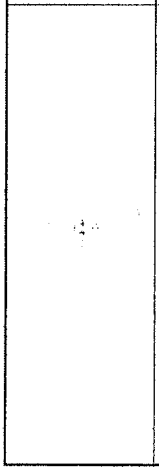
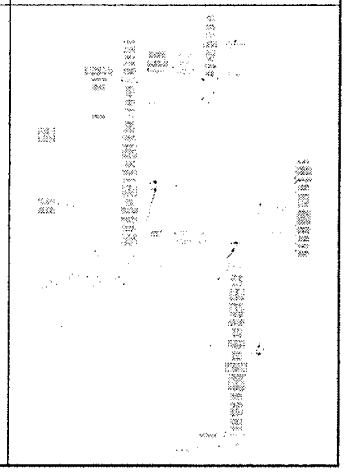
Attachment No. 2

alkenes

Acyclic branched or unbranched hydrocarbons having one carbon–carbon double bond and the general formula C_nH_{2n} . Acyclic branched or unbranched hydrocarbons having more than one double bond are alkadienes, alkatrienes, etc.

See also: olefins

Source:
PAC, 1995, 67, 1307 *(Glossary of class names of organic compounds and reactivity intermediates based on structure (IUPAC Recommendations 1995))* on page 1313

Interactive Link Maps		
First Level	Second Level	Third Level
		

Cite as:
IUPAC. Compendium of Chemical Terminology, 2nd ed. (the "Gold Book"). Compiled by A. D. McNaught and A. Wilkinson. Blackwell Scientific Publications, Oxford (1997). XML on-line corrected version: http://goldbook.iupac.org (2006-) created by M. Nic, J. Jirat, B. Kosata; updates compiled by A. Jenkins. ISBN 0-9678550-9-8. doi:10.1351/goldbook.

Last update: 2009-09-07; version: 2.1.5.

DOI of this term: doi:10.1351/goldbook.A00224.

Original PDF version: http://www.iupac.org/goldbook/A00224.pdf. The PDF version is out of date and is provided for reference purposes only. For some entries, the PDF version may be unavailable.

Version for print | History of this term

Attachment No. 3

Nomenclature

Naming Organic Compounds

The increasingly large number of organic compounds identified with each passing day, together with the fact that many of these compounds are isomers of other compounds, requires that a systematic nomenclature system be developed. Just as each distinct compound has a unique molecular structure which can be designated by a structural formula, each compound must be given a characteristic and unique name.
As organic chemistry grew and developed, many compounds were given trivial names, which are now commonly used and recognized. Some examples are:

Name	Methane	Butane	Acetone	Toluene	Acetylene	Ethyl Alcohol
Formula	CH_4	C_4H_{10}	CH_3COCH_3	$CH_3C_6H_5$	C_2H_2	C_2H_5OH

Such **common names** often have their origin in the history of the science and the natural sources of specific compounds, but the relationship of these names to each other is arbitrary, and no rational or systematic principles underly their assignments.

The IUPAC Systematic Approach to Nomenclature

A rational nomenclature system should do at least two things. First, it should indicate how the carbon atoms of a given compound are bonded together in a characteristic lattice of chains and rings. Second, it should identify and locate any functional groups present in the compound. Since hydrogen is such a common component of organic compounds, its amount and locations can be assumed from the tetravalency of carbon, and need not be specified in most cases.
The IUPAC nomenclature system is a set of logical rules devised and used by organic chemists to circumvent problems caused by arbitrary nomenclature. Knowing these rules and given a structural formula, one should be able to write a unique name for every distinct compound. Likewise, given a IUPAC name, one should be able to write a structural formula. In general, an IUPAC name will have three essential features:

- A root or base indicating a major chain or ring of carbon atoms found in the molecular structure.
- A suffix or other element(s) designating functional groups that may be present in the compound.
- Names of substituent groups, other than hydrogen, that complete the molecular structure.

As an introduction to the IUPAC nomenclature system, we shall first consider compounds that have no specific functional groups. Such compounds are composed only of carbon and hydrogen atoms bonded together by sigma bonds (all carbons are sp^3 hybridized).

An excellent presentation of organic nomenclature is provided on a Nomenclature Page, created by Dave Woodcock.
A full presentation of the IUPAC Rules is also available.

Alkanes

Alkanes

Hydrocarbons having no double or triple bond functional groups are classified as **alkanes** or **cycloalkanes**, depending on whether the carbon atoms of the molecule are arranged only in chains or also in rings. Although these hydrocarbons have no functional groups, they constitute the framework on which functional groups are located in other classes of compounds, and provide an ideal starting point for studying and naming organic compounds. The alkanes and cycloalkanes are also members of a larger class of compounds referred to as **aliphatic**. Simply put, aliphatic compounds are compounds that do not incorporate any aromatic rings in their molecular structure.
The following table lists the IUPAC names assigned to simple continuous-chain alkanes from C-1 to C-10. A common **"ane"** suffix identifies these compounds as alkanes. Longer chain alkanes are well known, and their names may be found in many reference and text books. The names **methane** through **decane** should be memorized, since they constitute the root of many IUPAC names. Fortunately, common numerical prefixes are used in naming chains of five or more carbon atoms.

Name	Molecular Formula	Structural Formula	Isomers	Name	Molecular Formula	Structural Formula	Isomers
methane	CH_4	CH_4	1	hexane	C_6H_{14}	$CH_3(CH_2)_4CH_3$	5
ethane	C_2H_6	CH_3CH_3	1	heptane	C_7H_{16}	$CH_3(CH_2)_5CH_3$	9
propane	C_3H_8	$CH_3CH_2CH_3$	1	octane	C_8H_{18}	$CH_3(CH_2)_6CH_3$	18
butane	C_4H_{10}	$CH_3CH_2CH_2CH_3$	2	nonane	C_9H_{20}	$CH_3(CH_2)_7CH_3$	35
pentane	C_5H_{12}	$CH_3(CH_2)_3CH_3$	3	decane	$C_{10}H_{22}$	$CH_3(CH_2)_8CH_3$	75

Some important behavior trends and terminologies:

(i) The formulas and structures of these alkanes increase uniformally by a CH_2 increment.
(ii) A uniform variation of this kind in a series of compounds is called **homologous**.
(iii) These formulas all fit the C_nH_{2n+2} rule. This is also the highest possible H/C ratio for a stable hydrocarbon.
(iv) Since the H/C ratio in these compounds is at a maximum, we call them **saturated** (with hydrogen).